

WHAT IS CLAIMED IS:

1. A fan propeller having a hub and plural circumferentially spaced blades, each of said blades having a leading edge, a peripheral rim (or tip) and a trailing edge with respect to the direction of rotation, at least selected
5 ones of said blades including a roughened portion of a pressure side surface of said selected ones of said blades to reduce tonal acoustic emissions generated by said fan propeller during rotation thereof.

2. The fan propeller set forth in Claim 1 wherein:
said roughened portion is disposed at or adjacent
said trailing edge of said selected ones of said blades,
respectively.

3. The fan propeller set forth in Claim 2 wherein:
said roughened portion extends generally from said peripheral tip inwardly toward said hub along said trailing edge.

4. The fan propeller set forth in Claim 1 wherein:
said roughened portion is provided by one or more trips formed at or near said trailing edge of said selected ones of said blades, respectively, said trips extending
5 generally normal to said surface.

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5. The fan propeller set forth in Claim 1 wherein:

said roughened portion is provided by a strip of material adhered to said selected ones of said blades, respectively.

6. The fan propeller set forth in Claim 1 wherein:

said roughened portion is provided by plural serrations formed on said selected ones of said blades, respectively.

7. The fan propeller set forth in Claim 1 wherein:

said roughened portion is provided by intersecting serrations formed on said selected ones of said blades, respectively.

8. The fan propeller set forth in Claim 1 wherein:

said roughened portion comprises an upturned portion of said selected ones of said blades, respectively, at said trailing edge.

9. The fan propeller set forth in Claim 1 wherein:

said roughened portion comprises an offset part of said selected ones of said blades, respectively, including said trailing edge.

10. The fan propeller set forth in Claim 1 wherein:

the height of said roughened portion is substantially equal to the thickness of a laminar boundary layer of air flowing over said surface of said selected ones
5 of said blades during operation of said fan propeller.

11. A fan propeller having a hub and plural circumferentially spaced blades, each of said blades having a leading edge, a blade tip and a trailing edge with respect to the direction of rotation of said fan propeller, at least
5 selected ones of said blades including a roughened portion of a pressure side surface of said selected ones of said blades to reduce tonal acoustic emissions generated by said fan propeller during rotation thereof, said roughened
10 layer trips formed at or near said trailing edge of said selected ones of said blades, respectively.

12. The fan propeller set forth in Claim 11 wherein:
said trips extend generally from said blade tip inwardly toward said hub along said trailing edge of said selected ones of said blades, respectively.

13. The fan propeller set forth in Claim 11 wherein:
said trips are provided by a strip of material adhered to said selected ones of said blades, respectively.

14. The fan propeller set forth in Claim 11 wherein:
said trips are provided by plural surfaces formed on said selected ones of said blades, respectively, and extending at an angle to said blade surfaces, respectively.

15. The fan propeller set forth in Claim 14 wherein:
said plural surfaces are formed by displacing portions of said selected ones of said blades adjacent said trailing edges, respectively.

16. The fan propeller set forth in Claim 11 wherein:

the height of said trips is substantially equal to the thickness of a laminar boundary layer of air flowing over said pressure side surface of said selected ones of said blades during operation of said fan propeller.

17. A heat exchanger unit including a cabinet, a heat exchanger mounted at said cabinet, and a motor driven fan for forcing airflow over said heat exchanger, said fan including a fan propeller having a hub and plural circumferentially spaced blades, each of said blades having a leading edge, a peripheral rim and a trailing edge with respect to the fan propeller direction of rotation, at least selected ones of said blades including a roughened portion of a blade pressure side surface of said selected ones of said blades for reducing tonal acoustic emissions generated by said fan propeller during rotation thereof, said roughened portion being provided by one or more laminar boundary layer trips formed at or near said trailing edges of said selected ones of said blades, respectively.

18. The heat exchanger unit set forth in Claim 17 wherein:

said trips extend generally from said rim inwardly toward said hub along said trailing edge of said selected ones of said blades, respectively.

19. The heat exchanger unit set forth in Claim 18
wherein:

said trips are provided by plural surfaces formed
on and integral with said selected ones of said blades,
5 respectively, said plural surfaces extending from and at an
angle with respect to said blade surfaces, respectively.

20. The heat exchanger unit set forth in Claim 19
wherein:

the height of said trips is substantially equal to
the thickness of a laminar boundary layer of air flowing
5 over said blade surfaces of said selected ones of said
blades during operation of said fan propeller.

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